RHIC p-Carbon Polarimeter

Status Report

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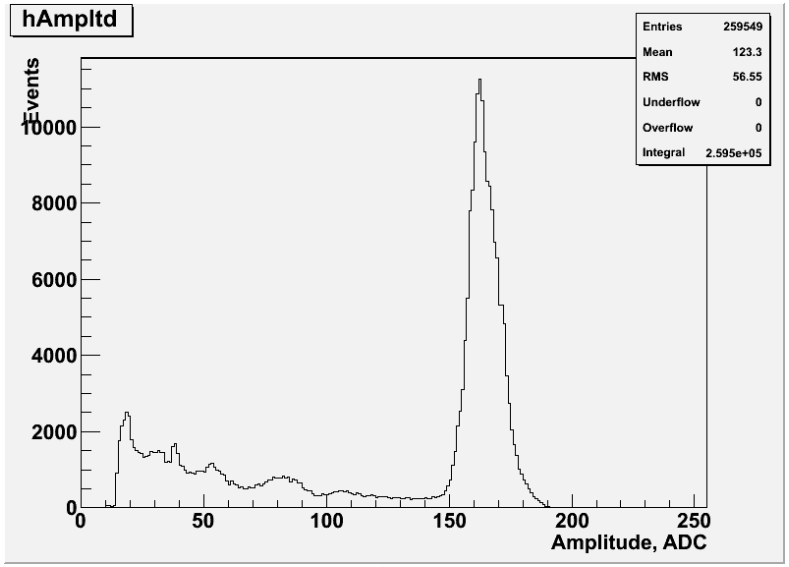
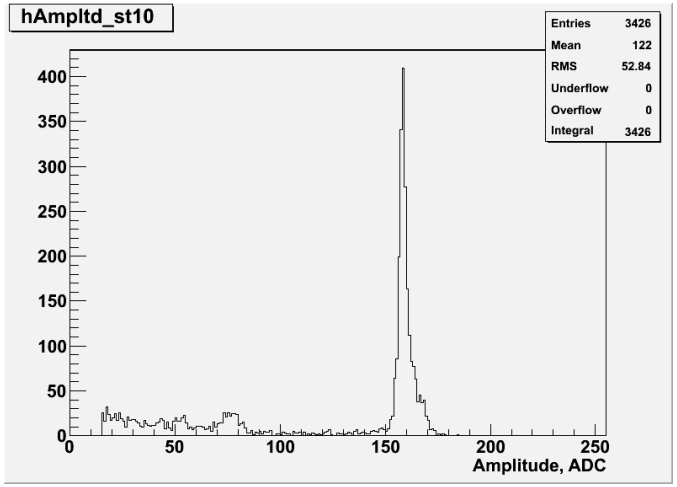
Preparing for Run11

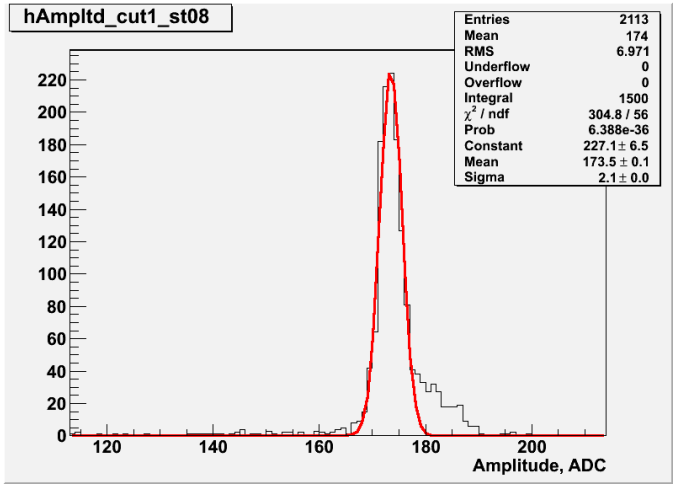
- Online PC's (`bluepc`, `yellowpc`, `insideip12`) are fully functional
  - Installed latest Linux SL 5.5
  - Set up diskless PC inside the tunnel
  - Cross mounted data disks
  - Shared `/home` and `/usr/local`
- All online software is installed and in working order
  - DAQ software has been significantly reorganized, simplified and improved (Igor/Dima + smaller changes by Dmitri)
  - All changes are now under control (SVN)
    - Changes can be tracked back
    - The working version is defined
- Old data backed up to rlnxsp03 and rlnxsp04
  It is also available on tape in HPSS
- *Still need to add new external/internal hard drives*

Online Tests

- Took multiple alpha/test runs (Bill/Dmitri)
  - In general data looks OK

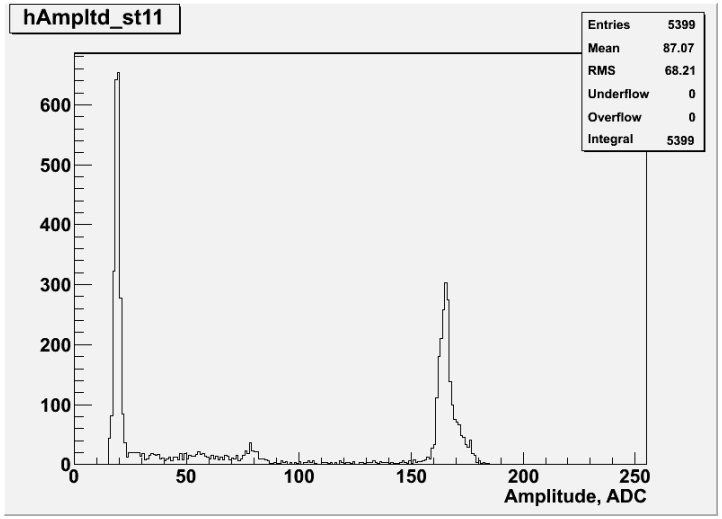


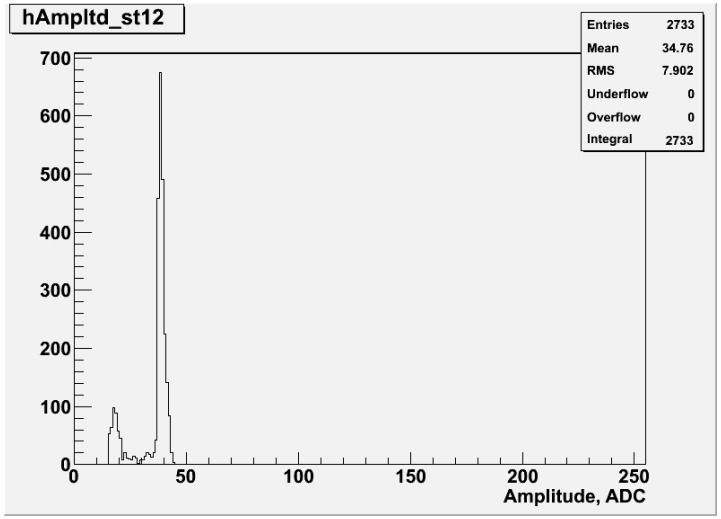


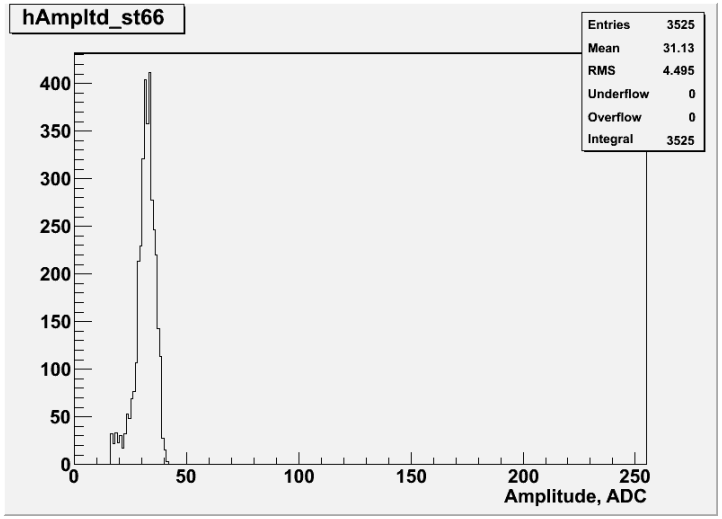


Online Tests

- There is an indication that channels 12 and 66 in either B1U or Y2D (forgot to check the MUX switch!) have a smaller gain
- Channel 63 might be dead



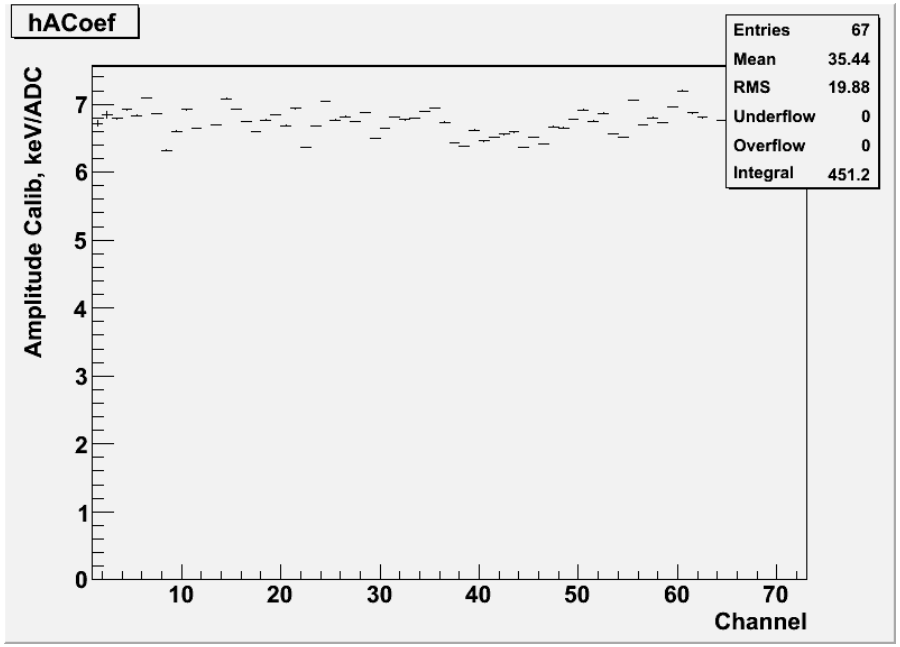


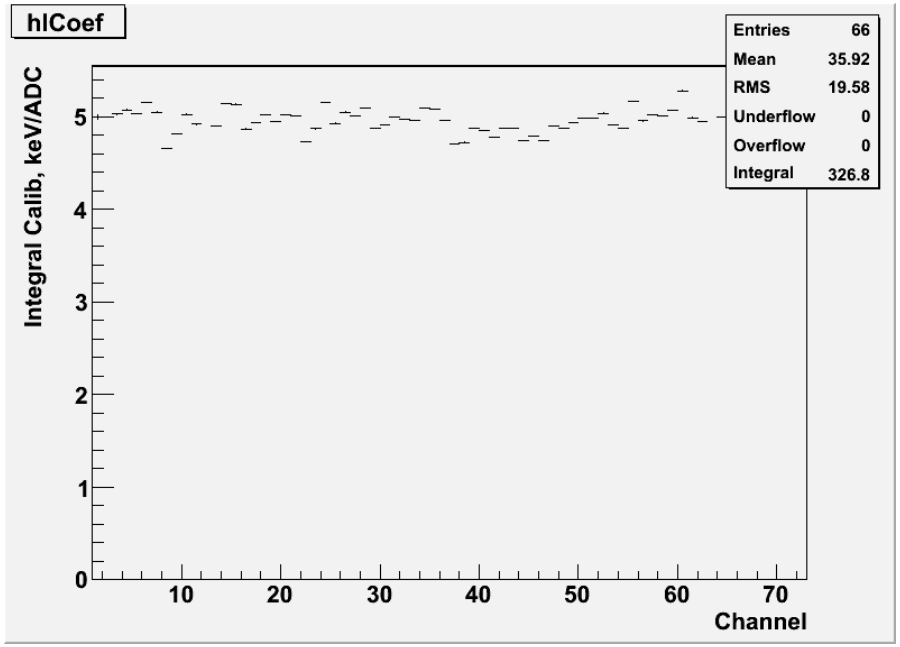


- What is going on with Channel 11?
- Need to take more runs to recallibrate and verify all of the above

Alpha Calibration

- Successfully calibrated all channels in both amplitude and integral

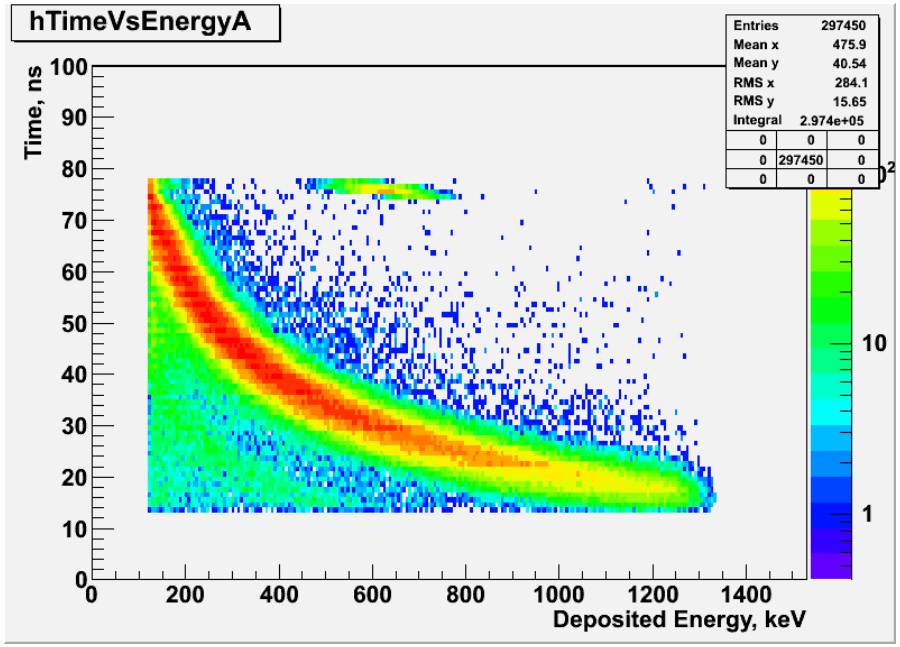


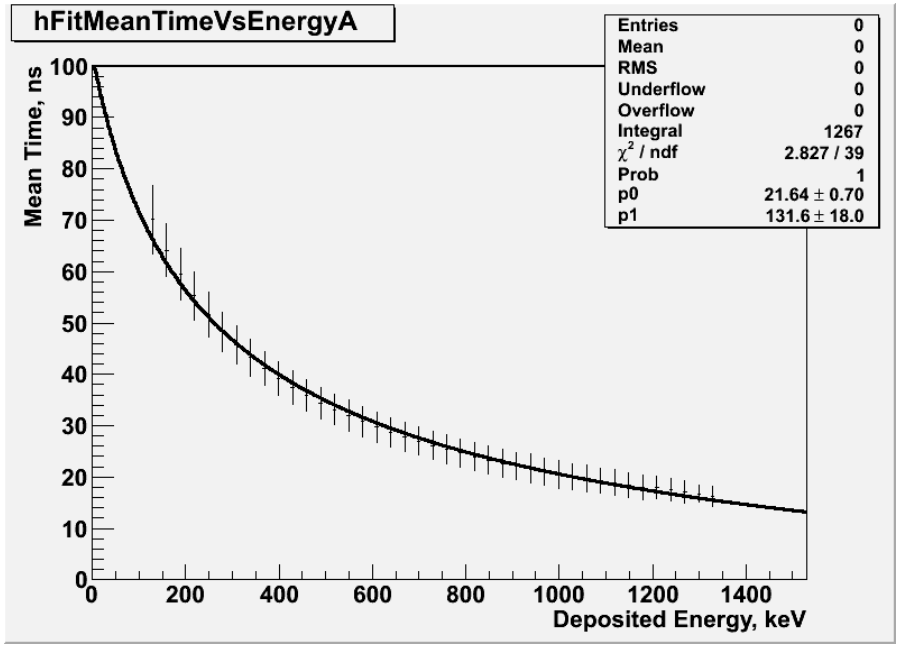


- Shadowed channels assigned average calibration value in the silicon detector

t_0 and Dead Layer Calibration

- Online requires α, t_0, and dead layer constants for a look-up table (trigger)
- Exercised the new offline framework by calibrating some older runs
- Run 10328.002 (Mar 10, 2009 14:23:15)



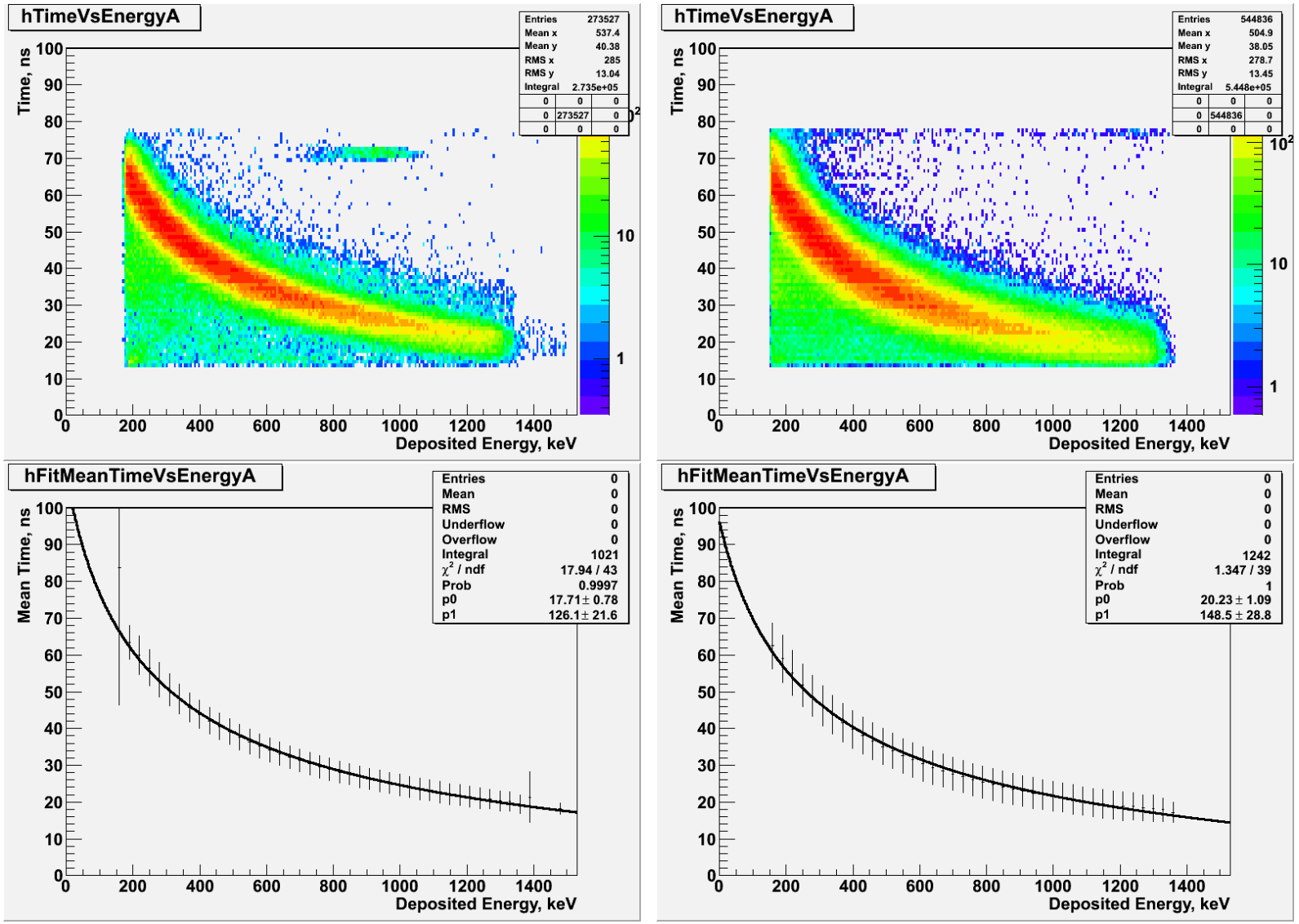


- Two parameter fit:

$$E_{\text{meas}} + E_{\text{loss}} = \frac{1}{2} \times M_C \times \frac{L^2}{(t_{\text{meas}} + t_0)^2}$$

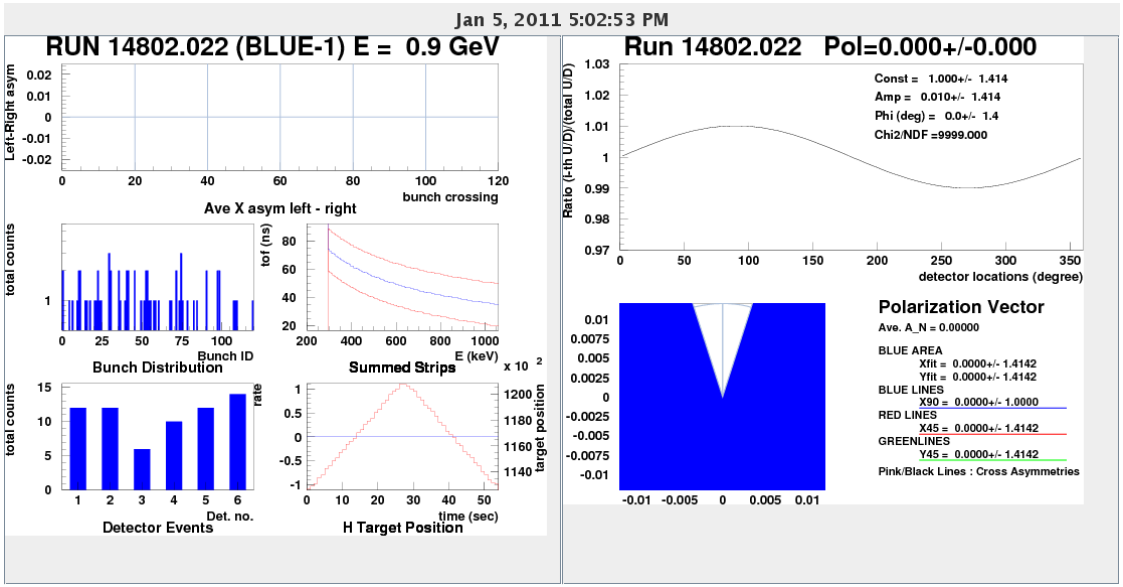
t_0 and Dead Layer Calibration

- Left: 10346.306 (Mar 11, 2009 18:18:18), $t_0 = 18 \pm 1$, $E_{\text{loss}} = 130 \pm 20$
  Right: 11004.302 (Jun 28, 2009 13:44:16), $t_0 = 20 \pm 1$, $E_{\text{loss}} = 150 \pm 30$



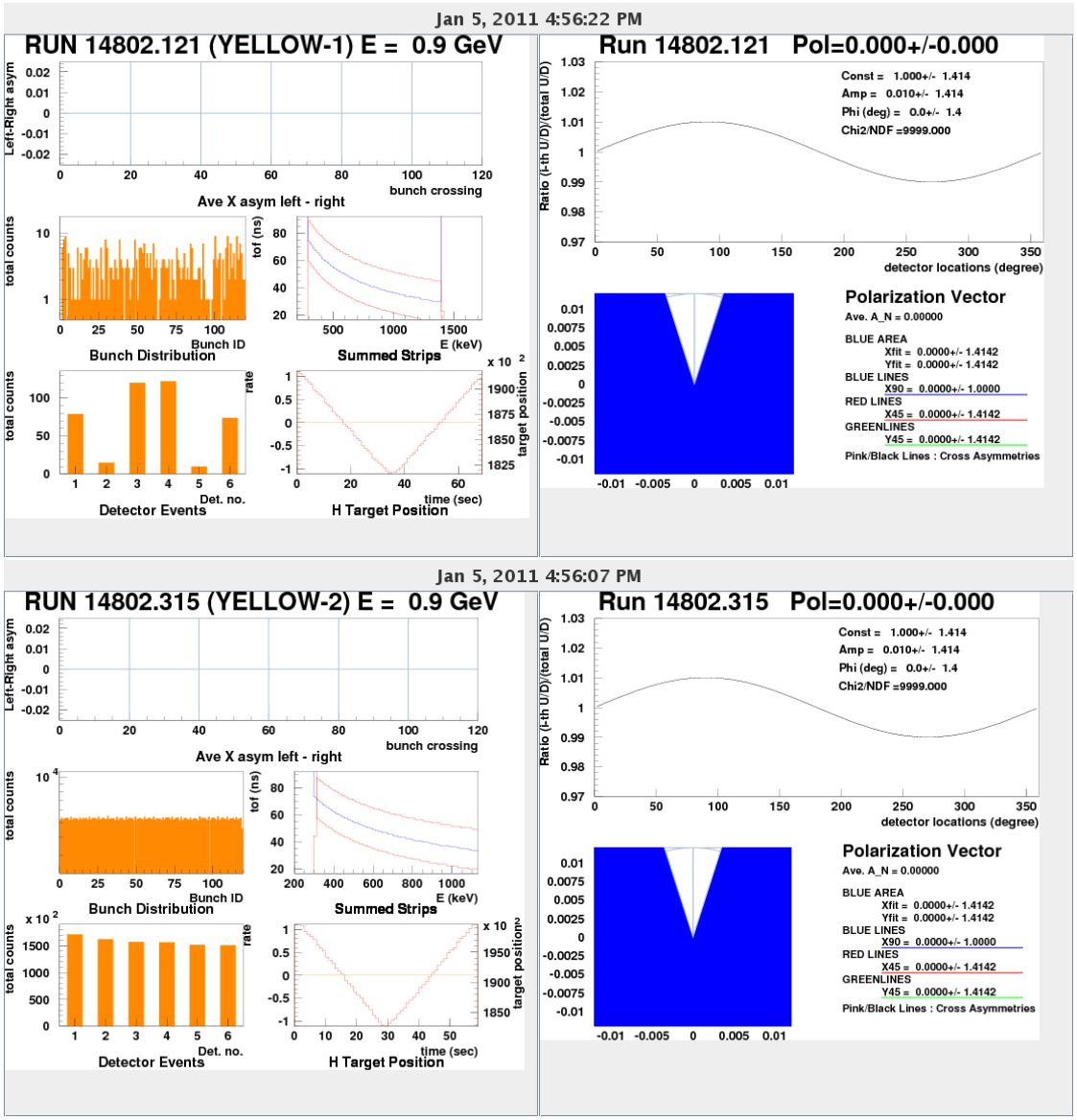
Online Polarimeter Test

- Blue polarimeters



Online Polarimeter Test

- Yellow polarimeters



Conclusions

- In general, the hardware and software is ready to take data
- Need to take more alpha/test runs to understand the current configuration
- The offline framework is also being improved
  - http://yellowpc.rhic.bnl.gov/rundb/
    http://www4.rcf.bnl.gov/ cnipol/rundb/
  - Common database is being developed
  - Still need to add more interesting plots
  - Still need to add run-by-run comparison